



EPA Region 7 TMDL Review

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| <i>TMDL ID</i> | 327 | <i>Water Body ID</i> | IA 04-RAC-01390-L |
| <i>Water Body Name</i> | North Twin Lake | | |
| <i>Pollutant</i> | Algae and Turbidity | | |
| <i>Tributary</i> | none | | |
| <i>State</i> | Iowa | <i>HUC</i> | 0710000606 |
| <i>Basin</i> | Raccoon River | | |
| <i>Submittal Date</i> | 11/15/2004 | | |
| <i>Approved</i> | yes | | |

Submittal Letter

State submittal letter indicates final TMDL(s) for specific pollutant(s)/ water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act.

A letter dated November 12, 2004 and received by EPA November 15, 2004 formally submitted this TMDL for approval. A revised version of this TMDL was received on December 1, 2004 by attachment to email.

Water Quality Standards Attainment

The water body's loading capacity for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

North Twin Lake was included on the impaired waters list in 1999. At that time, Class A and B uses were assessed as "partially supported." In 2002 the Class B aquatic life designated use was assessed as "not supporting" based on a 2000-2001 assessment. The impairment to Class A1 recreational use is the presence of aesthetically objectionable blooms of algae and of nuisance algal species. The Class B(LW) aquatic life use is partially supported due to excessive nutrient loading to the water column and nuisance blooms of algae based on a 2002 assessment.

Numeric Target(s)

Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

Water quality standards and beneficial uses are described as well as applicable narrative criteria. Phase I targets for this phased TMDL are established based on improving the lake's trophic state to correspond to a Trophic State Index (TSI) value for total phosphorus, chlorophyll and Secchi depth of <65. The minimum in-lake reduction in total phosphorus to meet this goal is 37% and for chlorophyll 46%.

Link Between Numeric Target(s) and Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.

The State of Iowa does not have numerical water quality criteria for algae or turbidity. The TMDL uses the surrogate measure of TSI which links phosphorus concentrations to algal and turbidity conditions. By reducing the TSI for total phosphorus to <65 the TSIs for chlorophyll and Secchi depth should be reduced to <65 based on the relationships seen in this lake.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.

Two pollutant sources in the watershed have been quantified; the first is watershed sources from external loads and internal cycling. The second is atmospheric deposition. This loading is estimated at 3,380 pounds from watershed sources and 160 pounds from atmospheric deposition. There are no significant point sources located in the watershed. The largest contributing source was found to be from row crop agriculture. There is also a single open feed lot contributing an estimated 200 pounds per year of the 3,380 pounds of phosphorus loaded from the watershed. Other potential sources of phosphorus include septic system failure, accidental wastewater release from a public sewer system and incidental loading from wildlife, pets and fish cleaning stations. These additional sources will be evaluated if required in Phase II of the TMDL.

Allocation

Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.

Phase I of this TMDL is to reduce phosphorus loading to achieve an in-lake TSITP<65 resulting in TSIs for Secchi depth and chlorophyll of <65. This should be accomplished with a total phosphorus load of 1,690 pounds per year less any margin of safety.

WLA Comment

There are no significant point sources for phosphorus in the watershed. The WLA is set to zero.

LA Comment

The load allocation based on target TSITP<65 is 1,520 pounds of phosphorus per year.

Margin of Safety

Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.

The margin of safety is explicit. The MOS is set at 170 pounds per year, this amounts to a 10% reduction of the calculated allowable load.

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).

TSI targets are applied to the growing season when algal blooms are prevalent. The model selected uses growing season mean total phosphorus concentration to calculate an average annual total phosphorus load.

Public Participation

Submittal describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).

Presentations were given to members of the North Twin Lake Restoration Association and Homeowners Association on July 19, 2004. The draft TMDL was presented to the public at North Twin Lake on October 28, 2004. The TMDL was posted on the IaDNR web site for public review. Comments received were reviewed and incorporated where appropriate.

Monitoring Plan for TMDL(s) Under Phased Approach

The TMDL identifies the monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used).

Follow-up monitoring will continue to meet, at a minimum, the minimum data requirements established by Iowa's 305(b) guidelines. An assessment will be completed by 2010 containing 3 lake samples per year for three years or 10 lake samples over a two year period.

Reasonable assurance

Reasonable assurance only applies when reduction in nonpoint source loading is required to meet the prescribed waste load allocations.

No allowances for increased nonpoint source phosphorus loading were included in the TMDL. Significant changes in watershed land use were deemed unlikely and no waste loads are allocated.
